DYNAMIC RANGE COMPRESSION USING DIGITAL FREQUENCY WARPING

ABSTRACT OF THE DISCLOSURE

A dynamic range compression system is provided, using either a sample-by-sample or a block processing system. Such a system can be used, for example, in a hearing aid. The system, using a frequency-warped processing system, is comprised of a cascade of all-pass filters with the outputs of the all-pass filters providing the input to the frequency analysis used to compute the filter coefficients. The compression filter is then designed in the frequency domain. Using a compression filter having even symmetry guarantees that the group delay is constant and does not depend on the compression gains at any given time. Additionally, due to the use of all-pass filters, the compression filter group delay more closely matches human auditory latency. An inverse frequency transform back into the warped time domain is used to produce the compression filter coefficients that are convolved with the outputs of the all-pass delay line to give the processed output signal.

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